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AVICULTURAL MAGAZINE

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THE AVICULTURAL SOCIETY

The Avicultural Society was founded in 1894 for the study of British and foreign birds in the wild and in captivity. The Society is international in character, having members throughout the world.

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The AVICULTURAL MAGAZINE welcomes articles and news items from both members and non-members (no payment is made). These can be about any aspect of aviculture, conservation or natural history concerning non-domesticated bird species that is likely to be of interest to aviculturists. Articles submitted for publication should preferably not have been published elsewhere, and should ideally be written in English, though translation is possible. Scientific as well as vernacular bird names should be given, and references cited in the text should be listed at the end of the article. Material can be sent as an email attachment to editor@avisoc.co.uk and can be accepted in most common file formats. Files on disk and typed or handwritten manuscripts are also accepted. Line drawings, black and white or colour photographs can be used to illustrate articles and should be clearly captioned. Tables and graphs submitted will be used whenever possible. Graphs should ideally be accompanied by the relevant source data.

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Cover Picture: Torrent Duck *Merganetta armata* by Joe Blossom.

AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY

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The Avicultural Society

FOR THE STUDY OF BRITISH AND FOREIGN BIRDS
IN THE WILD AND CAPTIVITY

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FROM THE CHAIRMAN

Following publication of the responses to the members' questionnaire, your council has been asked how we plan to address the issues raised. The results have been discussed, and my feeling is that the views of the council are broadly in line with those expressed most often in members' responses. It is obvious that members are not all looking for the same things from the Society, and we do not intend to pursue every suggestion made – in making one person happy we might make twenty unhappy - we can't please all the people all the time! Perceptions also vary – some responses ask for things that others say they already get from the society.

I will deal with the suggestions for improvement in the order they are listed, ie starting with the issues raised most often. There are a number of areas in which we have already made significant progress in line with members' wishes.

More use of the internet; improve the website – we have introduced online subscription payments and have a facebook presence. However we do have work to do here and will make this a focus for this year, to improve not only the website but also the way that we use facebook.
Magazine to be printed on time – we have made changes to the way the magazine is produced in an attempt to address this, with only partial success so far. The current volume was very late starting because of delays with the previous one, but I hope that by the time you read this, we will be almost back on schedule.
Increase membership, especially the younger generation – the Raymond Sawyer Scholarship and Student Membership, both introduced in the last two years, help to do exactly that. Other ideas have been discussed, and I'm sure you can come up with more. Members can all play a part in recruitment.
More social events – we held extra meetings last summer, and have set up an events group to plan more meetings for next year. They hope to expand more of our events from one-day to two-day meetings, so that members who have the time to socialise will have more opportunity to do so, though members who can't spare two days will be able to join events for one.
Council should present a more welcoming face and have more interaction with members – this may have been an issue in the past, but I really don't feel that it is at present. Council are not a breed apart, they ARE members, just members who put time into running the Society. They enjoy socialising with other members. There is now a regular chairman's page in the magazine, and we also interact through facebook.
More links with other collections and zoos – I'm sure this is one of the reasons we've all joined and works very well for many members, but is difficult to formalise. Ideas welcome.

More attractive magazine – we have introduced colour covers and more colour inside.

Online magazine – we plan to introduce a membership option for those who would like to receive their magazines as downloads, once we are sure we can make this work.

More visits to private collections – discounting last autumn's trip to the Netherlands and Belgium, where we visited five amazing private collections, we have visited UK private collections in the last two years, and the events group is working on more visits. If you would like to invite us (or can get us invited) we'll come!

For sale section in magazine for birds and equipment – this will only be practical if we can rely on getting the magazine out on time. Even then, members' adverts online might be more helpful than in a quarterly magazine.

Let members know how they can contribute short items to the magazine – we do this in every issue and online.

More involvement by members in the Society – apart from the questionnaire, we have invited members to come forward with ideas; two meetings this year were initiated and partly organised by non-council members. Members have been invited to council meetings to present ideas, and the AGM and other meetings also provide opportunities. Two of the three members of the events group are non-council members. Members help with manning stands at Stafford. We are ALWAYS open to members getting involved.

Reprint of older articles – this has been discussed and remains an option, though my feeling is that most would prefer new material if we can get it.

More information and contact details for authors – we will reintroduce this from vol. 122.

Cut down to two issues per year and increase size to A4 – cutting publication frequency has been suggested before, and we may need to consider this if we do not get enough material to sustain four issues per year, though I am convinced that most members would prefer a quarterly magazine if we can produce it.

Increase membership fees – we have no pressing financial need to do this at present, and it would be incompatible with the desire to increase our membership.

More exposure in the avicultural press – we have a very good relationship with Cage & Aviary Birds, and last year had three half-page colour features in the news pages in four weeks, plus a double-page spread on our European trip.

Membership card to allow reduced admission to zoos – the last time membership cards were discussed in council, the majority were not in favour, but the idea will be back on the agenda this year. It is unlikely we can achieve a general discount on zoo admission.

Breeders register – we will contact members to find out whether they would like to share their details with other members.

Visit to foreign dealers – our trips will continue to focus on collections. We have occasionally visited dealers to view birds where this fits with our itinerary. Buying trips are available elsewhere.

Annual show similar to the Dutch show – we are happy to be represented at shows, but running shows is something others already do well.

Open election of council members – council members are elected by members at the AGM. For the first time in (my) living memory we have held AGMs for several years in a row. We now need to make the nomination process more accessible to all.

Published society accounts – we will ensure that accounts are presented at each AGM. One of our aims for the website is to establish a members area. Once we are clear that we can make this work, we can post that members' accounts, minutes and other documents online.
Feedback section in magazine – the section at the back is called News & Views – in recent times it has contained only news, because no-one has sent views – please do.
More meetings in the North – in the last three years we have visited seven collections in the Midlands and East Anglia, five in the South and South-west and three in the North. The events group brief is to provide variety in terms of content, format and location of meetings.

Please don't regard the questionnaire as a one-off opportunity to have your say – the Society is always pleased to receive ideas and feedback from members – it is your society!

Nigel Hewston

WANTED FOR NEXT ISSUE – ARTICLES ON HUMMINGBIRDS

Now that we have introduced photographic covers, we would like to include articles on, or related to, our cover bird in each issue. The next issue's cover will feature the Coppery-naped Puffleg *Eriocnemis sappiropygia*. Pufflegs have never been common in aviculture, but if you have experience with this genus, or with any hummingbirds, in aviculture or in the wild, please help to make this new feature of the magazine a success by submitting an article or short note, preferably by the end of April. If you can't meet this deadline don't let that stop you writing – articles on hummingbirds are always welcome, and we will have more hummingbird covers.

We don't intend the whole issue to be dedicated to hummingbirds, so articles on other birds are welcome as always - all material or enquiries to Martin Greene, details inside front cover.

BACKNUMBERS FOR SALE

The Society has a large stock of *Avicultural Magazine* backnumbers for sale at only £5 per complete volume. Single issues are also available. Orders or enquiries to Mike Curzon mcurzonmbe@hotmail.co.uk. Mike will have a selection of backnumbers for sale at the AGM, and can bring orders to the meeting for collection.

POTENTIAL UK FIRST BREEDING OF THE GREAT WHITE PELICAN *Pelecanus onocrotalus* AT BLACKPOOL ZOO

By Andrew Bubbins

Blackpool Zoo has kept the Great White Pelican *Pelecanus onocrotalus* almost since its inception, with the first birds arriving in 1973. They have been housed in a variety of locations, including the current gorilla island, until they finally came to their current location, next to the Caribbean Flamingo *Phoenicopterus ruber*, in the millennium year.

For the pelicans, 2008 was a year of ups and downs. In December that year a pelican named 'Kristol' which had lived at the zoo for nearly 35 years, died – the last of the original group from the 70s. Her age when she arrived was unknown. The 'up' for the year was definitely the successful parent rearing of a chick, which is described here. Prior to the death of 'Kristol' the group consisted of 4.3 individuals. Most were obtained in the mid-nineties, originating from wild-caught individuals and individuals from Jurong Bird Park, where their origin was known.

At the end of March 2008, a pair of Pelicans which had been brought to the zoo in 1995, and had been seen mating with each other for at least three years, began nest building. The year had been much milder than normal, with January through to March having had unseasonably higher than average temperatures – and it is felt that this contributed to the onset of breeding activity. By April 9th the pair had laid their first egg, causing a flurry of activity amongst the other pelicans – and another two pairs built nests and laid, but the original pair seemed the most bonded.

At this time the birds were fed on Whiting *Merlangius merlangus* and Roach *Rutilus rutilus*, twice per day and this was not supplemented. The nest was built from twigs and branches which the birds had gleaned from their enclosure independently and built precariously upon a rock which jutted out into the lake and formed part of the bank. A second egg was laid by April 9th and both parents were reported to be incubating. One morning, on 8th May, the two other pairs of birds were seen to have left the nest site and there was no sign of the eggs, whilst the original pair was still incubating. On May 8th the first egg hatched – the other egg had failed to hatch. The baby grew quickly and at this time the pelicans were fed only on Roach. One of the other pairs of birds laid another round of eggs, but again these disappeared before the hatch date. Very quickly, the chick was seen to be shuffling around the nest – and within a few weeks it would shuffle around the breeding area of the exhibit, away from the nest. The nest was not approached by keeping staff for fear that the chick would be damaged by the nervous adults and so the flamingo house (behind the nest site) had the windows blacked out and a peep hole put in to monitor the chick more closely. He was left full winged, unlike the adults in the group.

The young pelican with the parents

On June 8th he was caught up for the first time and checked. He was seen to have a very good body condition and was covered in brown downy feathers. Feathers were taken for DNA analysis and he was leg-ringed with EAZA elliptical rings. It was not until 24th June at almost two months old, that he was first seen to swim across the lake to the feeding area and stand with the parents whilst they were fed, then beg for fish to be regurgitated. By this time he was almost half the size of an adult bird and the flight feathers had begun to emerge.

He continued to grow well and the DNA results confirmed he was a male. There were no problems with him in particular and though he remained largely brown for the first year, he moulted in 2009 to have only a few brown feathers remaining and by 2011 had completely obtained his white plumage.

Fully grown

Despite this result, the other birds laid once more in 2009, but the breeding pair did not: all of the eggs disappeared as before. In 2010 all of the females laid and the breeding female incubated two eggs again, but all three eggs were predated in one evening.

In 2011/12 the birds were moved inside, to stimulate breeding during the winter as in many German zoos – this resulted in two eggs, which the parents unfortunately broke underfoot. In 2013 the birds did not produce any eggs, but in 2014 four eggs were laid around April, after many copulation attempts being witnessed throughout March. All the eggs were taken for artificial incubation – unfortunately none were fertile this time.

A new female has now been obtained from Curraghs Wildlife Park on the Isle of Man in exchange for a male – and 1.2 young birds brought in from Augsburg Zoo in Germany to become future breeding stock. This now puts the Blackpool group at 5.5 individuals, and a much better number for potential breeding. The group are to be brought into the breeding house over the winter in the hope that this will stimulate egg laying and the breeding of 2008 can be replicated using the German zoo method.

As described above, the Great White Pelican *Pelicanus onocrotalus* has been bred by Blackpool Zoo. This is possibly the first successful breeding of this species in Great Britain or Ireland. Anyone knowing of a previous breeding is asked to inform the Secretary.

BREEDING THE SCISSOR-TAILED FLYCATCHER *Tyrannus forficatus* IN CAPTIVITY

By J. Cody Hickman, Tulsa Zoo

Background

The Scissor-tailed Flycatcher *Tyrannus forficatus* is a member of the Tyrannidae family which consists of 97 genera and 400 species. The genus Tyrannus consists of 13 species: Snowy-throated Kingbird *Tyrannus niveigularis*, White-throated Kingbird *Tyrannus albogularis*, Tropical Kingbird *Tyrannus melancholicus*, Couch's Kingbird *Tyrannus couchii*, Cassin's Kingbird *Tyrannus vociferans*, Thick-billed Kingbird *Tyrannus crassirostris*, Western Kingbird *Tyrannus verticalis*, Eastern Kingbird *Tyrannus tyrannus*, Grey Kingbird *Tyrannus dominicensis*, Loggerheard Kingbird *Tyrannus caudifasciatus*, Giant Kingbird *Tyrannus cubensis* and Fork-tailed Flycatcher *Tyrannus savanna*. The earliest recorded breeding of a tyrant species was by J. Delacour in 1935 when he bred Courier Water-tyrants *Fluvicola climazura climazura* and speaks of his experiences in the July 1935 article for Avicultural Magazine "Breeding of Courier Water-tyrant". He describes the nest being built by saying "Early last winter they started carrying moss and small twigs and soon built a purse-shaped nest overhanging the pond" (Delacour, 1935). In that year his pair produced one chick and then a second brood hatched in May with three healthy chicks, which the parents hatched in the same nest in which the first chick was reared. The parents didn't "molest their first chick…which is more remarkable as they try to attack savagely a newly imported specimen in a neighbouring aviary" (Delacour, 1935). His article also explains that a pair can live nicely with other species but will kill other individuals of the same species. According to the first breeding register which was kept in the United Kingdom, the second and third Tyrannid species that bred in captivity came from the genus *Pitangus*. The first breeding of the Great Kiskadee *Pitangus sulphuratus*, took place in 1965 at the Chester Zoo in England and the Lesser Kiskadee *Pitangus lector* was first bred in 2005 by an individual named P. Lewis (Matthews, 2011). The "Records of Birds Bred in Captivity" in the International Zoo Yearbook (Lucas & Duplaix-Hall, 1972) list an Eastern Kingbird *Tyrannus tyrannus* hatched at Houston Zoo in 1970, but nothing appears to have been published about this breeding. Vermillion Flycatchers *Pyrocephalus rubinus* have bred repeatedly at Zoo Wuppertal, in Germany since the 1990s (Lindholm, 2008). These are the only recorded species of the Tyrannidae family bred in captivity until 2010 when the Tulsa Zoo in Tulsa, Oklahoma successfully bred Scissor-tailed Flycatchers.

The Scissor-tailed Flycatcher is a Nearctic and Neotropical species that ranges from "south-western Missouri, Arkansas, and western Louisiana west to south-eastern Colorado and south-eastern New Mexico" in the summer and "southern Mexico south to Costa Rica" in the winter (Dole, 2003). The species is sexually dimorphic with the male having longer tail feathers than the female. The breeding season for Scissor-tailed Flycatcher is April-July in the wild. The breeding habitat for Scissor-tailed Flycatchers is "open prairies and fields with scattered trees and shrubs" (Dole, 2003). The Scissor-tailed Flycatcher has one of the most beautiful aerial breeding displays of any passerine in North America. The "sky dance" as it is called consists of the male flying about "30 meters in the air, and performing a series of V-shaped "flights". Then the male will "plunge down in an erratic zigzag flight display, while uttering rolling calls" (Bouglouan, 2010). The male has a salmon colour under both wings which is very visible during breeding display as he flaps his wings vigorously to catch the female's attention and ward off other would be suitors. During the breeding season the Scissor-tailed Flycatcher female will lay 4-5 white eggs that are white with brown spots. Incubation is strictly by the female and lasts 14- 15 days with fledging occurring after 14-17days. The nest is a cup that consists of grasses, twigs and rootlets which is built by the female. In Oklahoma, surveys have shown a slight decrease in the population, but as a whole the population is stable. The Scissor-tailed Flycatcher was declared the state bird of Oklahoma in 1951.

Physical Description

The Scissor-tailed Flycatcher is 14 inches long with "bluish grey above the wings, pale pink and whitish below the wings; with red-orange sides". Males' tails are twice the length of the body. Females are paler with a tail that is the same length as the body (Edwards, 1998). The weight range is 29-48 grams.

Captive History

At present, only six Scissor-tailed Flycatchers are on display in the U.S. with Tulsa Zoo and Oklahoma City Zoo exhibiting both sexes while the National Aviary exhibits two females. The Scissor-tailed Flycatcher has only been exhibited occasionally with a total of five zoos displaying them since 1979.

According to the International Species Information System (ISIS), Tulsa Zoo provided the first Scissor-tailed Flycatchers displayed in captivity to St. Louis Zoo in 1979. A male was sent in December 1979 and a rehabilitated female in October 1981 which was the earliest recorded date that Scissor-tailed Flycatchers were displayed. There are no records of this pair breeding.

The first successful breeding occurred in July 2010 at the Tulsa Zoo with the hatching of three chicks. Unfortunately, only one bird lived past the age of one and this bird currently resides at the National Aviary. The Tulsa Zoo decided in 2012 to breed this species again in a smaller exhibit than where the first breeding took place in 2010. The pair laid three clutches of eggs with the first clutch of four eggs being infertile. The pair then laid a second clutch of four eggs in June 2012. One chick hatched on July 3rd, but after only four days the chick was found dead. It was then decided to let the Scissor-tailed Flycatchers try once more and on July 18th it was observed that the female was brooding four eggs. On August 4th one chick was observed in the nest. This was the only chick that hatched from the clutch and again, it was found dead on August 6th. It was decided after three clutches to destroy the nest and resume breeding next year.

Historically, the Oklahoma City Zoo was an institution that had been known for working a great deal with Scissor-tailed Flycatchers, commencing in 1985 when four eggs were collected from the wild for artificial incubation. Unfortunately the four chicks died, the longest-lived surviving for seven days. The next time the Oklahoma City Zoo worked with Scissor-tailed Flycatchers was a few months later when one was donated by the public in September 1985. This bird lived for 13 years dying in 1998. This was the longest-lived Scissor-tailed Flycatcher in captivity. The Oklahoma City Zoo had one more Scissor-tailed Flycatcher in 1989 that lived for roughly two years until it died in 1991. Oklahoma City Zoo did not exhibit this species again until 2006. The final institution which currently exhibits this species is the National Aviary in Pittsburgh, Pennsylvania. It received Tulsa Zoo's successfully raised female that was transferred to Oklahoma City Zoo in 2010 and a wild caught female from the Oklahoma City Zoo. They both were shipped from Oklahoma City Zoo to the National Aviary in 2011.

General Information

In October of 2006, the Tulsa Zoo received a juvenile Scissor-tailed Flycatcher for rehabilitation. Due to its immaturity it was decided to not release the bird. In October 2007, the bird was sexed as a male after elongated tail feathers were noted. This bird resided in the Eastern Forest Building - a songbird exhibit in the North American Living Museum (NALM) complex with several other species of birds: 1.1 Eastern Bluebirds *Sialia sialis*, 0.0.2 White-throated Sparrow *Zonotrichia albicollis*, 1.0 Summer Tanager *Piranga rubra*, 0.0.2 Cedar Waxwing *Bombycilla cedrorum*, 1.1 Northern Cardinal *Cardinalis cardinalis*, 1.0 American Robin *Turdus migratorius* and 1.1 Northern Bobwhite *Colinus virginianus*. The 1.0 Scissor-tailed Flycatcher lived in the songbird exhibit without a mate until a female was received from the Oklahoma City Zoo in October of 2009. After a thirty day quarantine, the female was placed in a wire cage and exhibited in December 2009. The male was instantly interested, displaying zig-zag flight patterns and vocalizing during the duration of the female's stay. The female was then released into the exhibit after a few days. During this time the male was aggressive towards the other birds especially the male Eastern Bluebird. The male began to chase the female. This behaviour was then followed by attempted copulation; however the female showed no interest in him. This behaviour continued sporadically until late May when all breeding behaviour ceased until July. In July, the male recommenced chasing and again tried to copulate with the female. He would initiate copulation by vocalizing and flapping his wings while perching. In the wild, this is also a territorial display to deter other males. He would begin to fly in a zigzag pattern and then chase the female until she landed, he would then attempt to copulate.

Exhibit

The housing consisted of a large open exhibit 20 feet high, 15 feet wide and 15 feet deep. It had a variety of grapevines and trees of different sizes. The floor was planted with grasses, leaves and artificial plants.

Behaviour

During breeding they can be aggressive towards other birds housed in the same unit, especially other insectivores. Out of the breeding season they can be chased from the food bowl, and will feed next to other birds. During the breeding season, to encourage natural behaviour, insects are routinely thrown in the air to give them the opportunity to catch insects on the wing and forage on the ground. They have little or no interest in the other birds housed alongside them and will perch next to them.

Diet

The Scissor-tailed Flycatcher is an insectivore, feeding mainly on grasshoppers and crickets. Since they were housed with a variety of different species, the Tulsa Zoo makes a diet that fits the nutritional needs of all the birds within an exhibit. The diet consists of soaked parrot pellets, soaked waterfowl maintenance pellets, safflower seed, corn, ground fruit mix, fruit salad, 5 crickets, 5 super worms, 15 mealworms, 5 waxworms and vionate. The Scissor-tailed Flycatchers have been observed eating apple and honeydew melon occasionally. At the end of the day, 10-15 mealworms and 8-10 waxworms are tossed in the air which they catch on the wing. During the breeding season this type of 'on the wing' feeding is increased to twice a day.

Breeding/Nesting Behaviour

During mid-June the female was observed eagerly catching insects on the wing. During this same time period the male began to have similar increased feeding behaviour and for the first time he was observed feeding the female. Also, during this time a new behaviour was observed by the female in which she would chase the male. In late June she was observed taking grasses from the floor of the exhibit to a nest container on a beam near the public walkway. The beam was approximately 10 feet high and the nesting container was a plastic meshed berry container. The nesting material used was Johnson Grass *Sorghum halepense* that was found on the zoo grounds. She made an open cup nest within a week. One egg was laid each day until a total of three eggs were laid.

Nesting/Chicks

On July 3rd 2010, the nest was checked and it was found to have three eggs. In the wild the female is the only one to incubate the eggs and the male will protect the area from other birds. In the zoo environment the female would leave the nest to feed for short periods and did not rely on the male to feed her. The female also would leave for a short period of time when the keeper entered to clean. The male would become very vocal and the female would leave the nest to meet the male on a branch. Because of this behaviour it was decided to clean the exhibit every other day. It was noticed that three chicks were present in July. At this point only mealworms were offered to the collection and all other insects were restricted because of fear of impaction. There was also a bowl of mealworms placed on the beam next to the nest every morning and mealworms were tossed onto the floor twice a day. The female would feed the chicks but occasionally the male was seen feeding the chicks. The nest was checked every other day and on July 23rd, during the morning check, one chick was found dead in the nest.

Fledging

The two remaining chicks began to fledge on August 9th. One chick flew into the public walkway so for their safety they were placed in a "fledging cage". It was set up so that the parents could still feed the chicks while they strengthened their flight muscles in a safe space. They were given a morning and afternoon feed and were gradually introduced to a diversity of insects such as: crickets, waxworms and super worms. Soaked waterfowl pellets, soaked parrot pellets and bird of prey diet were also added. Mealworms and waxworms were the preferred food eaten by the chicks. They stayed in this flight cage for 20 days until they were eating on their own. They were then moved from the songbird exhibit to a holding space until they could be placed at another institution. During this time they were sexed as one male and one female. On November 4th the male was found dead. Prior to death, the male experienced seizure-like episodes and was thought to have had a neurological problem. But no conclusive evidence was found in the post mortem.

Conclusion

The female was sent to Oklahoma City Zoo and later transferred to the National Aviary. The key to successful breeding of Scissor-tailed Flycatcher at the Tulsa Zoo was offering waxworms during the breeding season and mimicking the natural behaviour of catching bugs on the wing by tossing waxworms in the air for them to catch. The male would participate in this behaviour regularly; he would then offer them to the female. There was little competition in the exhibit other than the Eastern Bluebirds and it seems Scissor-tails are able to breed and raise chicks in a mixed exhibit.

Acknowledgement

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THE NATIONAL BIRD OF PREY HOSPITAL

By Kim Kirkbride

The Hawk Conservancy Trust is an important centre for receiving injured birds of prey and has one of the only specialist bird of prey hospitals in the UK.

Each year we receive and treat, on an accident and emergency basis, approximately 200 wild raptors. Many of these are brought in by members of the public, farmers, police, RSPCA, or other wildlife rescue organisations, due to illness or injury. The birds are treated by our expert avian vet John Chitty (BVetMed, CertZooMed, CBiol, MSB, MRCVS) and by our dedicated hospital staff. All birds are treated with the intention of releasing them back into the wild where practicable. However, some of the injuries sustained by these birds are too severe for any realistic chance of recovery or release back into the wild. In these extreme cases the birds are humanely euthanised.

Some of the raptors brought into the hospital need long term care in order to recover from their injuries or illnesses. These birds are placed in specially built 'rehabilitation aviaries', where they can gain fitness prior to release. The Hawk Conservancy Trust has developed techniques to care for these wild birds without institutionalising them to their surroundings or making them dependent on humans. The hospital facility offers an ideal environment in which to conduct research that improves the nursing care and husbandry of these vulnerable raptors.

The hospital also receives many young birds each spring. These chicks are brought in by people who believe that they have fallen from the nest and been abandoned. The 'orphans' are cared for until they have developed their adult plumage and can survive on their own. At this stage the juvenile birds can be released into the wild.

Kim and Peregrine Falcon in the hospital

Current work

Raptor medicine and rehabilitation are complex subjects in which knowledge is always improving. In this context, the Trust operates a range of projects aimed at increasing our knowledge in order to continually improve the methods of care and rehabilitation we use.

The Trust is currently running a number of research projects, both within the hospital and out in the field, which investigate different aspects of rehabilitation, including:

- Releasing chicks back to the wild
- Post-release survival of rehabilitated raptors
- Effects of human presence or absence on rehabilitating raptors
- Parasite burdens of raptors admitted to the hospital
- Analysis and distribution of raptor mortality factors
- Tawny Owl *Strix aluco* post-release monitoring
- A retrospective study of morbidity and mortality of raptors in southern England

Statistics

Since 1995, the Trust has compiled a wealth of information on birds admitted to the National Bird of Prey Hospital. Since opening in 1995, the hospital has admitted:

Kestrel *Falco tinnunculus* – 572
Tawny Owl *Strix aluco* – 864
Little Owl *Athene noctua* – 216
Barn Owl *Tyto alba* – 284
Sparrowhawk *Accipiter nisus* – 258
Buzzard *Buteo buteo* – 442
Hobby *Falco subbuteo* – 32
Long Eared Owl *Asio otus* – 15
Short Eared Owl *Asio flammeus* – 12
Peregrine *Falco peregrinus* – 48
Red Kite *Milvus milvus* – 27
Merlin *Falco columbarius* – 3
Honey Buzzard *Pernis apivorus* – 4
Goshawk *Accipiter gentilis* – 8
Osprey *Pandion haliaetus* – 2
Marsh Harrier *Circus aeruginosus* - 1
Total 2788 birds

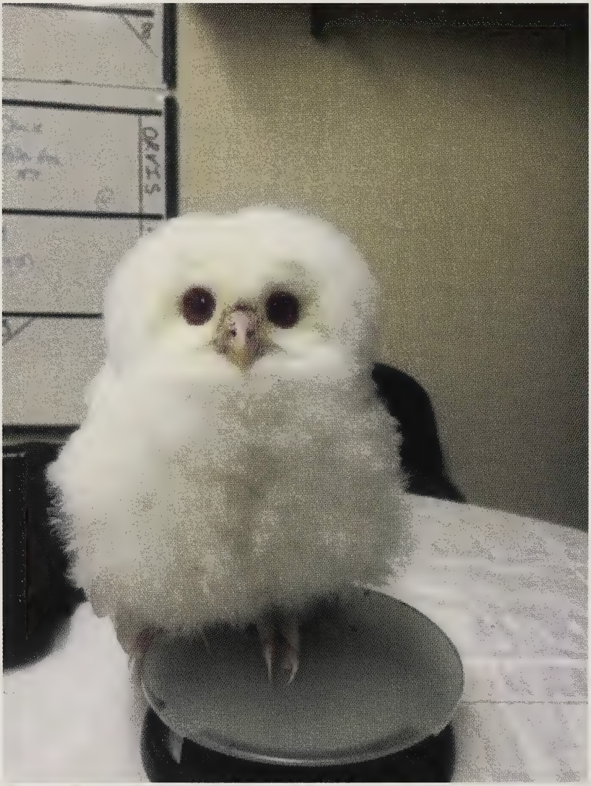
[Figures presented are up to 01/01/15]

Interesting Cases

Throughout the years some 'interesting' cases have been admitted. Some of these include rarer birds such as Ospreys *Pandion haliaetus* and Honey Buzzards *Pernis apivorus*. As both of these species are migratory, it is crucial that the correct rehabilitation techniques are used to ensure they can be released in time for their migration.

An Osprey was admitted in 2013 after injuring her wing whilst fishing in Wiltshire. We believe that she was on her way back to Scotland, returning from Africa for the breeding season. Thankfully the injury needed no medical intervention. After 3 weeks and 30 fresh trout later (ironically purchased from the farm she fished from in the first place) she was successfully released back into the wild to continue her journey to Scotland.

During June 2014 the Trust was contacted about a Tawny Owl *Strix aluco* chick which had been found on the ground. Branching in Tawny Owl chicks is common during the spring, and the National Bird of Prey Hospital admit between 10 and 20 chicks every year. However, this one was rather unusual. As you can see in the image the Tawny chick was an albino (identifiable by the deep red eyes which leucistic birds don't have).



Albino Tawny Owl

The Trust has never admitted a wild albino bird, so this was an extremely rare admission. Unfortunately, due to the genetically poor genes these birds carry, the bird subsequently died.

Incubation – Trust Birds

In addition to being used for the admission of injured birds of prey, the National Bird of Prey Hospital also serves as a good site for the incubation and rearing of the Trust's own birds. The hospital has incubation and rearing rooms solely dedicated to onsite birds during the breeding season.

Over the years, the Trust has successfully reared numerous birds for displays. The vast majority of eggs artificially incubated have been owls, hand-reared for displays. Most other species are parent-reared although the Trust has also crèche reared Black Kite *Milvus migrans*, Yellow-billed Kite *Milvus aegyptius* and Harris' Hawk *Parabuteo unicinctus*.

Yellow-billed Kite chick

Species successfully hatched and reared include Boobook Owl *Ninox boobook*, Snowy Owl *Bubo scandiacus*, Barn Owl *Tyto alba*, Hawk Owl *Surnia ulula*, Ural Owl *Strix uralensis* and Burrowing Owl *Athene cunicularia* (to name but a few).

The adult Boobook Owls have proven to be very useful to us here at the Trust as they will frequently work as our 'foster' owls during the spring. Despite being over 20 years old, the pair is able to produce at least one fertile egg most years. In 2013, the Trust decided to remove the egg from the pair to artificially incubate and rear for display. In return, the adults were provided with a wild Tawny Owl chick (currently too small to look after itself, but unable to be returned back to the wild). Imprinting wild birds is something the Trust does not encourage, and, wherever possible, interaction is kept to a minimum. In the case of Tawny Owl chicks, Boobook Owls can act as surrogate parents ensuring the chicks can be returned back to the wild when they are old enough to fend for themselves.

On occasions, the Trust will artificially rear eggs if parents abandon their nest sites. In 2015 this happened with our pair of Ferruginous Pygmy Owls *Glaucidium brasilianum*. The pair are relatively new and as of yet have not successfully incubated to point of hatch. Therefore, it was decided to attempt to artificially incubate some of the clutch. In May the Trust successfully hatched a chick – sadly, it died a week later due to metabolic bone complications. However, the Trust is hoping that in 2016 the rearing may be more successful.

WHEN DID THE WHITE JAVA SPARROW *Padda oryzivora* ARRIVE IN EUROPE?

By Ingvar Svanberg

After the Convention of Kanagawa in March 31st 1854, Japan was forced to open the country to the outside world. Similar agreements were signed with France and the United Kingdom (Anglo-Japanese Friendship Treaty) in the following months. Soon after the treaties, foreign merchants were allowed into the former totally secluded, isolated and closed nation. When the Europeans arrived in Japan in the late 1850s they found among other things, the Bengalese Finch *Lonchura domestica* kept in small cages and domesticated by Japanese breeders. It was imported into England in the early 1860s and soon became popular within the European bird trade and amongst hobby aviculturists. However, Japanese bird fanciers also bred another domesticated bird in great number, the white Java Sparrow *Padda oryzivora* (LINNAEUS, 1758). Both of these birds were domesticated by Japanese bird breeders, not by the Chinese, as is sometimes stated in literature. I wrote earlier about the avicultural history of the Bengalese Finch, but when was the domesticated white Java Sparrow imported into Europe?

The wild variety of the Java Sparrow – the grey one with white cheeks and a black head – was being imported as a wild caught bird in large numbers into Europe from South-East Asia (Java, Bali and Bawean) in the eighteenth century. Dutch seamen were the first to bring *rijstvogel* (hence sometimes "Rice Bird" in English and recorded already in early eighteenth century) to Europe. Therefore the Java Sparrow was not an unknown species when its domesticated relative came to Europe at probably about the same time as the Bengalese Finch, around 1860. However, breeding the wild species was never common in Europe. In June 1847, Robert M. Lingwood in Lyston, Herefordshire, had a pair in an aviary which reared three youngsters, probably the first record in Europe. The next breeding was not recorded until 1870 when the Swiss ornithologist Carl Stölker successfully bred them at his home. However, it remained difficult to breed the wild caught specimens in captivity. Wild-captured grey Java Sparrows were one of the most common species in the bird trade until the mid-twentieth century. Thousands and thousands of wild Java Sparrows were imported into Europe each year. It was considered to be more attractive than the domesticated form, according to many fanciers. British bird breeder Jeffrey Trollope emphasizes in his book *Seed-Eating Birds* (1992) that it was not until the breeders a decade earlier started with a colony breeding system that they got better results with the wild captured birds. However, it seems that only the dominant pair bred under these conditions.

Domestication in Japan

However, wild-captured Java Sparrows were not only imported into Europe by the Dutch ships in the eighteenth century. Dutch merchants also brought this species to Japan at about the same time. The Dutch East India Company was the only company that was allowed to trade in Japan through their trading post Dejima in the Nagasaki harbour. Among other things they also provided the Japanese market with exotic birds (such as the White-rumped Munia *Lonchura* *striata* from which the domesticated Bengalese Finch has descended, but also Java Sparrows and many other foreign species) from Southeast Asia. The imported Java Sparrows eventually bred in Japan and the skilled local bird breeders soon developed the white domesticated variety. It has obviously been popular with the Japanese for a long time and the city Nagoya in the in the Chūbu region is mentioned as an early breeding centre. The Japanese bred the white Java Sparrow in large numbers. It was kept "very much like a breeding machine", according to one observer. The Java Sparrow was also a favourite among Japanese artists and is therefore commonly depicted in nineteenth century woodblock prints. The early twentieth century author Natsume Sōseki wrote his famous book *Bunchō* (1908) about his pet Java Sparrow. At the end of the story, the beloved bird dies of neglect.

The white Java Sparrow – which also produces grey offspring – must be regarded as a true domesticated bird, but its history is still not very well known. "The clear white colour is more evidence of the superiority of the scientific breeding of the bird-fanciers" in East Asia, writes American author George H. Holden. He gives in 1888 some insights into the Japanese breeding:

"The Japanese make a business of breeding the White Java Sparrows; and each pair has a small cage, in which is placed a perch and a nest. By careful and stimulating feeding, they are made to lay freely; and, as soon as a brood is hatched, the old birds are placed in another cage; continue hatching and breeding. The young are brought up by hand, being fed on a scalded vegetable decoction mixed with millet-seed."

Ornithologist Pereira mentions that the Java Sparrow was not a great favourite as a cage bird among the Chinese in Hong Kong in the 1930s, at least not the Java Sparrow in its original colours. However, the white Japanese ones were sought after: "In Japan, where they have been bred in captivity for the past thirty years or more, the Japanese have produced a white variety and it is this bird that is much in demand as a pet—not for its beauty, for the wild bird surpasses it in this point, but simply because it is out of the ordinary. Good white birds without the least sign of grey or black are fifty times as expensive as their commoner brothers. If a careful examination is made, most of the white birds that are offered for sale in the shops of Hong Kong will be seen to have some form of blemish or other." Nevertheless, he mentions that the Java sparrows were popular with Chinese fortune-tellers in Hong Kong: "These gentry, who profess to tell everyone's fortunes except their own, are adept at training them to pick cards on which are various Chinese characters and hieroglyphics indicating the fortunes of the ignorant victim attempting to probe into the mysteries of the future. So that it will not fly away, the fortune-telling Java sparrow has invariably all his primaries pulled out and each time after drawing a card is rewarded with a single grain of rice stowed in a match-box. The more the customers, the more grains for him, otherwise the bird goes hungry until evening—as the wily fortune-teller runs no risk, knowing well that a bird with a full crop will draw no card."

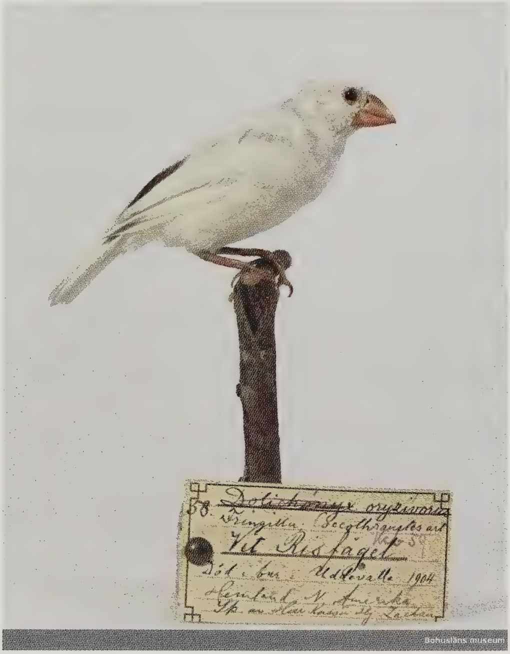
Importation to Europe

When finally imported to Europe in the 1860s, the domesticated variety of the Java Sparrow became popular in some circles. C. E. Dyson wrote in 1878: "At the Crystal Palace show in

1868, a pair of Java Sparrows were exhibited by Mr. Hawkins, entirely white, without the black head and throat and rose-coloured beak of the grey Java Sparrow and with the plumage equally soft and downy, and I was told that they were most beautiful birds. The hen had laid four eggs. They came, I believe, from Japan, and were the first brought to England. Since then many pure white specimens have been exhibited".

The white domesticated Java Sparrows are easy to breed, while the wild-caught ones remained difficult to get offspring from. The famous aviculturalist Arthur Butler wrote in 1897:

"Although it is possible to purchase newly imported grey birds at a ridiculously low price, it is of little use to attempt to breed with these excepting in a netted-in garden where natural nesting sites abound […] With white birds, on the other hand, breeding could always be accomplished because (probably for centuries) they have been bred in boxes. I failed to breed Java Sparrows until I crossed a wild cock bird with a white hen. The offspring from these birds varied not a little, some being pure greys like their father, others pied grey and white in all degrees. Since that time I have bred many every year, and have selected pairs from my stock with which other aviculturalists have bred successfully. The white blood, and the fact that the young are hatched and brought up in a nest-box, seem at once to ensure a similar form of nidification in these home-bred birds."



White Java Sparrow

However, the wild variety remained popular within aviculture in the west because of its beauty. It was also much more inexpensive than the domesticated one. As long as the wild captured grey birds were low in price, the domesticated birds continued to be rather uncommon in the European and North American trade. In North America, the grey bird is sometimes referred to as the Java temple bird.

Even in the 1970s and 1980s the wild-captured Java Sparrow was one of the most commonly kept cage-birds in Europe and North America. In some places, like California, it was made illegal to own one because of a perceived threat to agriculture. The species has been released in many areas (e.g. China, Taiwan, Japan, Sri Lanka, Fiji, Hawaii, and Puerto Rico) and has become an invasive threat towards other birds.

Nowadays, when imports from south-east Asia have ceased, most grey Java Sparrows and other colour varieties like agate, cinnamon (which first occurred in Australia), fawn, ivory, opal, isabel, pastel, pied and silver all originate from the Japanese domesticated birds.

The white Java Sparrow was, like the Bengalese Finch, orignally domesticated and bred in large number in Japan. Local bird keepers were very skilled and the birds were probably kept just as pets, not for instance as ritual release birds within the Buddhist cult. The domesticated white Java Sparrow arrived about 150 years ago into Europe and it is still very popular in Japan too. It has made a great contribution to contemporary aviculture all over the world.

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AVICULTURAL SOCIETY SPRING SOCIAL MEETING AT WWT SLIMBRIDGE, APRIL 2015

By Philip Schofield

The meeting was a great success, comprising a well-attended Council Meeting, AGM, and tour of the off-show rearing facilities. In between these activities, members wandered the grounds, looking at birds and socialising.

The Wildfowl and Wetlands Trust was founded in 1946, as the Severn Wildfowl Trust, by Peter (later Sir Peter) Scott, son of the Antarctic explorer. The Trust now has nine centres across the UK, most of them with captive collections, centred on areas of wetland habitat. From attempting to hold all the wildfowl species and subspecies, WWT collections have changed their emphasis in recent years. Reflecting the need to conserve all wetland species, the centres now hold representative collections of ducks, geese and swans, with selected members of other animal groups. Slimbridge has otters, beavers and water shrews alongside various amphibian species.

Where one might once have seen the full range of Canada Goose subspecies, the only ones I noticed were a very approachable pair of Taverner's. Following recent taxonomic revision, these are now *Branta hutchinsii taverneri*, rather than *B. canadensis taverneri*. I am never quite sure whether I agree with this 'splitting', but DNA cannot lie!

Other geese on view included a confiding pair of Andean Geese *Chloephaga melanoptera* in the South American Pen, sharing their enclosure with Chiloe Wigeon *Anas sibilatrix*, Crested Duck *Lophonetta specularioides* and of course Chilean Flamingos *Phoenicopterus chilensis*. Flamingos have been a feature of the collection for many years; this was the first place in the UK to breed Greater *Phoenicopterus roseus*, Chilean *Phoenicopterus chilensis*, Caribbean *Phoenicopterus ruber* and Andean *Phoenicopterus andinus*. The relatively cold sensitive Lesser Flamingo *Phoenicopterus minor* has been less successful, and James's *Phoenicoparrus jamesi* have never bred in the UK. 'Mr James', now in his seventies, is the only one of his species (also called Puna Flamingo) left in the UK, although there is a small breeding group in Berlin Zoo. The new immersion exhibit for Greater Flamingos has the visitor viewing a colony some two hundred and fifty strong at water level, with a side order of Cape Teal *Anas capensis*, South African Shelduck *Tadorna cana*, White-faced Whistling Duck *Dendrocygna viduata* and Yellowbilled Duck *Anas undulata*. Local Rooks *Corvus frugilegus* were helping themselves from the flamingo feeding stations.

A long established feature is the Tropical House, originally built to breed Pygmy Geese. I am unclear whether this has been achieved here, but African Pygmy Geese *Nettapus auritus* were on view in a luxuriant planted setting, seeming very much at home with White-backed Duck *Thalassornis leuconotus*, Black-winged Stilts *Himantopus himantopus* and one of my favourite species, Javan (Lesser) Whistling Duck *Dendrocygna javanica*, smallest and possibly the least hardy of the *Dendrocygna*. Various passerine species were also present, but not always easy to spot among the vegetation. When they were available, Violet-eared Hummingbirds bred here more than once.

The Rearing Centre, sparsely populated early in the season, held Freckled ducklings *Stictonetta naevosa*, leading to an interesting discussion about keeping them clean - apparently they are very messy feeders.

While the wintering Bewick's Swans *Cygnus columbianus*, geese and ducks had all left for their Northern breeding grounds by mid-April, local Oystercatchers *Haematopus ostralegus*, Shelduck *Tadorna tadorna* and the reintroduced Common Cranes *Grus grus* (which have since bred successfully), were much in evidence. I had not associated Slimbridge with wild Avocets *Recurvirostra avosetta*, but there they were, complementing the small group that share the Waders' Aviary with Redshank *Tringa totanus* and Ruff *Philomachus pugnax*.

My only regret on the day was the impossibility of seeing everything in one short visit. I need to go back soon!

Avicultural Society Members at WWT

INCUBATION AND HAND REARING

By Peter Stocks

(This article was written by our late secretary/treasurer and was discovered recently)

There are many and various reasons as to why artificial incubation and rearing has a place in the breeding programme. It may be that some females, whilst being prolific egg layers, are inadequate as far as motherhood goes, or that young are "dispatched" as they hatch. In the case of a species like the Milky Eagle Owl *Bubo lacteus* that is between five and seven years before reaching breeding age and then only lays two eggs, it can be seen as a useful management tool by encouraging the birds to double clutch. Whatever the reason or motivation, it should be remembered that females are not egg laying machines and that removal of eggs needs to be a decision based upon conservation, not greed.

However, no matter what the reason is, there is one prime requirement for successful incubation and hand-rearing and that is fertile eggs. It never ceases to amaze me just how many keepers persist year in year out with "pairs" of undetermined sex. To state the obvious, you must have a pair of known sex.

With birds such as owls, parrots etc. which are in the main monomorphic, that is to say there is no visual method of sexing, birds should be either surgically or DNA sexed, thereby not losing valuable breeding seasons on a "wait and see" basis.

Having decided to embark down what may seem to be the rather daunting road of artificial incubation and hand rearing, the next consideration is that of equipment. The minimum requirements are an incubator, hatcher and a brooder, not forgetting all the ancillary equipment, which will be discussed within this article.

Practically all of the incubators presently available have electronic temperature controls, accurate to within 0.5° Celsius, which is generally sufficient for most eggs. Most species will have a successful hatch at around 37.5°C. Incubation temperature variations, especially in the early stages of the egg's development, may well cause deformed chicks and probable subsequent death of the chick. Too hot will cook the egg making the embryo non-viable, too cold will at worst kill the embryo, though depending on temperature variation and the stage of incubation, may only mean having an extended incubation period and hatching later than expected.

For this reason my own incubators have been modified to include sensors which are connected to a small klaxon, these alert me to any temperature change of more than 0.5°C These sensors have a battery back-up to ensure that they are activated in the event of a mains failure.

Incubators are available in two forms; the first being the forced air or moving air system which is fan assisted thereby maintaining a more even temperature throughout the incubator. As a fertile egg can be considered a living thing it follows that both respiration and metabolism must be active, therefore there must be an infusion of oxygen into the egg and carbon dioxide and water out of the egg, all accomplished via the pores of the egg. The passing of warm, fresh air over the egg surface helps the escape of harmful gases from the egg that would kill the developing embryo.

Fan assisted incubators generally come equipped with some form of automatic turning system which may be rollers or a tilting mechanism which rotates the egg through 90 degrees every hour, 24 hours a day. It has long been proved that the regular turning is desirable for a good hatch as it allows the developing embryo to make contact with different areas of nutrition of the yolk which is its food source. In addition, it also prevents the surrounding membrane sticking to the chick and thus causing problems when hatching. If through reasons of financial constraint, an incubator is purchased without an automatic turning facility, eggs may be turned by hand, though it should be remembered that this is time consuming. Eggs must be turned a minimum of three times per day, more if possible, the accepted practice being an odd number of times. Eggs should not be rotated in the same direction each time but clockwise then anticlockwise, this prevents the winding up and twisting of the membrane which holds the developing embryo in place.

Prior to eggs hatching, the egg should be moved to the hatcher. However, if a hatcher is not available, it is recommended that the turning facility of the incubator be turned off, though this may not be a practical proposition if there are other eggs at earlier stages of incubation. If a separate hatcher is not available the egg may be put in an appropriately sized, tissue lined, well-washed margarine tub. Some incubators do come with a wiremesh-bottomed hatching tray which stands clear of the rollers. Hatching though can be a messy business and what should be a relatively clean and hygienic incubator will quickly become detrimental to developing eggs' embryos.

The second type of incubator is the still air incubator which is totally reliant on convection and will therefore have cold spots. It is possible to map out the cold spots, but because this type relies on convection, the micro-environment within will take much longer than in fan assisted incubators to recover and reach its optimum after having been opened for inspection. My own personal preference is to use a fan assisted incubator for incubation and a still air incubator as a hatcher, but set one degree lower, i.e 36.5°C.

Regardless of which style of incubator you elect to purchase, the thing to keep uppermost in your mind is hygiene, as this is the only way consistently successful hatches can be accomplished. To this end an incubator, or for that matter the hatcher and the brooder, should be both easy to clean and maintain with internal mechanism that can easily be removed, i.e. rollers, tilting trays etc. All corners and crevices where general debris builds up should be totally accessible for cleaning purposes. Whilst there are many anti-bacterial disinfectants available, their effectiveness is curtailed by a build up of 'dirt and debris'. At the end of the day there is no substitute for a through cleaning routine, which should be done each time a batch of eggs passes through the incubator/hatcher.

The second, and probably most challenging of the two factors to control, (the first being temperature), is humidity. One method is to manage the surface area of a dish of water, some incubators having troughs and possibly a change sensor which tops up the troughs on an "as required" basis. The second method is to spray tepid water into the incubator until the required humidity level is reached; though this method is rather hit and miss and is impractical to maintain through a 24-hour period.

The generally accepted definition of Relative Humidity is the amount of water vapour held in the air compared to the fully saturated value (100%) at that temperature. For us a normal level would be somewhere between 45% - 65%. For owls and some other raptors a humidity level of 35-40% seems about right. Different species however, will require different levels of humidity depending on the climatic conditions for that species, i.e. rain forest species will require a greater humidity, as will waterfowl etc. If you are unsure of the humidity level for your chosen species, it is suggested to work to a humidity level of around 50% and, by trial and error, fine-tune it.

There are two ways of establishing Relative Humidity; one is using the wet bulb hygrometer method. This method is simply a thermometer as used on the incubator, with a wick attached to the bulb end and the other end is immersed in water within the incubator, water then evaporates into the air at a relative humidity lower than 100%, as this occurs it cools the surface that it leaves. The lower the humidity in the air the more water vaporises from the wick and subsequently, the lower the temperature reading on the thermometer. The variation between this thermometer reading and the dry thermometer reading which was made simultaneously with a second thermometer, is known as "the wet bulb depression" and can be used to calculate the relative humidity using the chart below.

WET BULB DEPRESSION

Temp °C	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
36	94	87	81	76	70	65	60	55	51	46	42	38	33	29	25
37	94	87	82	76	70	65	60	55	51	46	42	38	34	30	26
38	94	87	81	76	71	66	61	56	51	47	43	39	35	30	27

The Relative Humidity is then established as follows:-

Dry bulb reading of 37°C – wet bulb reading of 25°C = wet bulb depression of 12°C.

By then referring to the chart where the dry bulb reading intersects with the wet bulb depression reading it gives, for example, a relative humidity of 38%.

There is however, another method that is somewhat easier, this being the digital hygrometer or humidity dial gauge, which should be available from your incubator supplier. The instructions accompanying such instruments normally involve wrapping in a wet towel for one hour, whereupon they should read somewhere between 94%-96% humidity, adjustments are made by means of a small screw at the back. It is far better however to calibrate these instruments against the wet bulb method, these may then be left permanently in the incubator or hatcher, thereby allowing the humidity to be checked at a glance. Excessive humidity will result in the prevention of toxic gases and water vapour escaping from the egg and subsequently result in deformed chicks and ultimately, death.

The next stage of incubation is monitoring the eggs whilst in the incubator. Although superficially similar, the shell of an egg not only varies in porosity between species, but also between birds of the same species; even eggs from the same female may vary. For a successful hatch, all eggs should lose somewhere between 11% and 16% of their laid weight by the time they hatch, 15% is generally the norm.

For this reason it is essential to monitor individual eggs and to keep accurate records. Only in this way will you know if your incubator is running at the correct Relative Humidity for those particular eggs. If it is found that the majority of eggs are progressing on target the easiest method is to transfer other eggs to a second incubator, either wetter or dryer. However, if you do not have the luxury of a second incubator, too much weight loss may be combatted by reducing the porous surface area of the egg by coating a portion with clear nail varnish. It will be found that some eggs will need very close attention and may require, at various stages, to be transferred again between incubators.

There are three ways of monitoring the development of eggs. The first is candling using a cellascope, a box with a low wattage bulb and an appropriately sized egg-shaped hole in which to rest the egg. Using the cellascope will show the air sac and the developing spider-like blood vessels radiating from the embryo. This is easiest with eggs such as those of owls and parrots, which have relatively thin, white shells. Pigmented and thick-shelled eggs can be more difficult to candle. As the embryo develops, the egg loses water, and subsequently the air sac gets progressively larger. As with growing proficiency the keeper will soon be able to evaluate the correct size of the air sac, thereby noting when unusual development occurs. For the inexperienced keeper it is often helpful to lightly mark the egg where the air sac lies with a soft pencil, this will then give some indication as to the progressive development of the embryo.

The second and probably the most used system is that of weighing the eggs, though to be both reliable and accurate, the freshly laid weight should be determined, but if not fresh laid, definitely prior to incubation having started. With owls and other species, this may not be much of a problem as they may not commence incubation until the second or even the third egg is laid. By the simple expediency of subtracting approx. 15% of the egg weight as fresh laid will enable you to draw a graph by plotting against the length of incubation:-

** Assuming a fresh laid weight of 30gms and an incubation period of 30 days.

Weighing the eggs every 3-4 days will confirm if they are losing the correct amount of moisture, though I would recommend "problem" eggs be weighed more often, daily if necessary, and the appropriate action taken.

For weighing it is essential to have a good quality set of electronic scales or balances with a resolution of 0.01 grams as these give greater accuracy. These normally have a digital (LCD) readout with auto zero and tare functions and are powered by a 9v PP3 battery or mains adapter.

The third and most accurate method is by density, density being the proportion of mass to volume, the change in density giving an accurate picture of the ongoing development of the embryo. The equipment required is relatively simple and comprises an electronic scale, as previously described, plus a set of Vernier gauges, preferable digital for easy reading, and a small calculator. The procedure itself means measuring the length and breadth of the egg using the Vernier gauges and weighing the egg using the electronic scales and then applying a simple formulation as follows:-

> Length x breadth x breadth x 0.51 (0.51 is a constant which can be used for all owl eggs)

For example:-

Given that a Bengal Eagle Owl *Bubo bengalensis* egg has a length of 5.1 cm and a breadth of 4.4 cm the formula would read as follows:-

> 5.1 cm x 4.4 cm x 4.4 cm x 0.51, giving an answer of 50.355.

The weight, which is in this case 52.1 grams, is then divided by the volume 50.355 giving a density of 1.034. A graph is then drawn in the same way as previous with between 11%-16% needing to be lost. NB Once the volume of an egg has been calculated this will remain constant throughout. All that is required is to weigh the egg and divide the weight by the volume, to confirm that it remains on track a graph.

Just how often the egg is weighed is dependent on how well the egg is staying on track, though approx. every three days would be about right. If however the egg is problematic, appropriate action should be taken as outlined previously.

The next piece of equipment required is a hatcher. Whilst purpose built hatchers are available, my own personal preference is a still air incubator. Not only is this eminently suitable as a hatcher, but also in the case of an emergency, can be used as an incubator, though one would naturally have to turn the eggs by hand. Although a good hatch can be achieved by leaving the eggs in the incubator, it is by far preferable to have a separate hatcher to which eggs should be transferred prior to there being an internal pip. This being the stage when the chick has broken into the air sac but there is no visible sign of piping through the shell. Having a separate hatcher also means there is no build up of harmful bacteria and debris, as it is unlikely that the incubator will be able to be cleaned as it may well still contain eggs. It is also considered by some that it is both unnecessary, and possibly harmful, if the egg is turned once the chick has commenced rotating within the egg. It is also suggested that to achieve a good hatch there should be an increase in humidity at hatching time, this will prevent the drying of the membrane thereby making it easier to hatch. If after due consideration it is decided to add water this is something that can only be done in a separate hatcher, as to add water to the incubator would increase humidity beyond acceptable levels for the remaining eggs. If water is added to the hatcher to increase the humidity this should only be done after the egg has chipped. After the chick breaks into the air sac its lungs will start to function and subsequently it will produce carbon dioxide just as we do. Prior to the shell being pipped, the only route for the ingress of oxygen and the expelling of carbon dioxide is through the pores of the shell. If the humidity level is too high this will prevent the exchange of gases and the chick may either hatch prematurely or even suffocate and die.

My own thoughts are that there should be no need to add water as, if the chick has good management throughout its incubation, it will successfully hatch under the same conditions. This has been borne out by the number of occasions I have miscalculated the incubation time only to find a chick on my next inspection of the incubator.

The final major piece of equipment is the brooder. Depending on the size of the chick the hatcher will suffice as a brooder for the first few days of a chicks life, though I like to move them to a brooder proper within 48 hours so that I may clean the hatcher ready for the next batch of eggs. Purpose built brooders are available and should be a consideration, as both hatchers and still air incubators generally have electronic controls which are not capable of operating below 30°C. I would suggest three brooders, all set at different temperatures so that as the chicks get older and more able to regulate their own body temperature, they can be moved onto a brooder with a lower temperature. This is preferable to continually adjusting the settings on a single brooder and then find that further chicks have hatched and require it somewhat hotter.

It is impossible to give definitive temperatures at which chicks should be kept, as there are too many variables. This would include the size of the chick at hatch i.e. a Common Scops *Otus scops* weighs in at around 8gms, whilst a Tawny *Strix aluco* is several times heavier so will be fine on a slightly lower temperature. Multiple young will require a slightly lower heat. As a general rule, my own brooders run at 36°C, 32°C, 27°C, respectively and then one turned off giving room temperature of 21°C. with young spending 5-7 days in each. The young will indicate if they are in a brooder of the correct temperature range, if they are too hot the skin will appear quite pink, there will also be signs of panting and probably agitation, this is the time to move them out. If, however, they are feeling the cold the skin colour will appear a pallid, waxy grey and if there are several chicks they will huddle together for warmth.

There are, I am sure, as many successful techniques of hand rearing young as there are keepers, and as I specialise in owls I will confine my methods to them. For the first 12-24 hours of a chick's life there is no need to feed it as it will have stored sufficient nutrition from the yolk sac. It is during this period that the chick is drying out and also recovering from the general exertions of hatching and adjusting to life outside the shell. A healthy chick will occasionally rear its head, cheep and beg for food, this should be ignored.

The very first feed comprises tiny slivers of muscle meat, usually from the upper leg area of a day old chick (DOC), this is dipped into a warm solution of a water-soluble probiotic and fed with the aid of a pair of tweezers (I use surgical stainless steel ones). Gradually increase the amount given so that by the 5th-6th feed the chick can be fed until it refuses food. For owls four feeds a day are about right to start with, the first being given in the morning, the second around midday, the third tea time and the final feed, last thing at night (8am 1pm 5pm 10pm). These times will allow the chick time to digest its previous meal.

As owls, unlike other birds, do not have a crop, it is not as obvious when sufficient food has been given, but time and experience will soon help you gauge an amount that is right. Remember, do not overfeed or force feed.

On day three small pieces of bone/cartilage should be given along with the muscle meat, a section of the neck vertebrae is ideal as this is not prone to splintering thereby risking damage to the oesophagus. It is a must to supply bone or alternatively a calcium supplement at this stage as this helps prevent rickets, especially in species such as the Snowy Owl *Nyctea scandiaca* and in any instance an owl's digestive system can digest tougher foods. Do not feed what may seem to be a most nutritious portion of meat such as the kidneys and liver, these are filters and contain the toxins removed from the body. It should also be remembered that as an owl's digestive tract and system are designed for much tougher tissues, therefore, at the beginning of its second week of life pieces of skin, fur and feather should be included to provide roughage. Normally from the commencement of feeding roughage, pellets will be cast in the next day or two. Roughage is as much an essential as meat to allow an owl to develop correctly, indeed they are quite capable of digesting material which we would consider a young bird incapable of digesting. As time progresses, feeds will be reduced to three times a day and later to just morning and night. During this time partially whole, and then whole carcasses such as mice, hamsters can be fed, though evisceration is recommended.

I cannot over-stress the importance of accurate record keeping, to which end all chicks are weighed before and after feeding for the first week, during the second week only before and after the first and last feeds, finally into the third week when they are weighed only on the last feed. By keeping records we have been able to compile a profile of each species we have incubated and reared, as both sets of records have been combined, providing comprehensive data which can be referred to in future years should problems arise.

The final thing left directly associated with incubation and hand rearing, is the siting of all the equipment discussed. Even the most high-tech incubator etc. cannot be reasonably expected to cope with constantly changing temperatures and humidity. The room chosen should be, as far as possible, free from these variations. If they are to be kept in the house they must be kept somewhere where they will not get knocked or interfered with by children or well meaning adults. All windows should be equipped with dark blinds to prevent direct sunlight falling on the incubators etc. and thereby causing havoc with temperature settings.

My own solution to this was to build a purpose-built room (similar to a bird room but minus the windows) from half inch sterling board on three and a half inch stud work, and being boarded both sides with the resulting gap filled with loft insulation. This gives somewhere to conceal the wiring. (It would seem you can't have too many sockets). Both sidewalls have work surfaces fitted in the style of a galley kitchen.

All other interior surfaces are varnished, making for easily cleaned surfaces, whether they are vertical or horizontal. Whether you have a room to adapt or are constructing a purpose built one, there are certain environmental requirements. In my own case the room temperature is maintained at around 21°C-23°C and the humidity by means of a dehumidifier set at around 50%-55%. There is naturally a myriad of equipment available to assist in manipulating the incubator room environment; this includes such things as air conditioning units etc, limited only by the depth of your pocket.

Finally, whatever level of equipment you decide to run with, all rooms should be well ventilated. Small stuffy rooms will not bode well for a good hatch. Also remember to impress on yourself to only keep in the incubator room items that are required in that room, clutter and discarded eggshells will only cause problems.

AUTUMN SOCIAL MEETING 2015

By Nigel Hewston

20 members met at Banham Zoo for a morning tour of the zoo with Animal Manager Mike Woolham. We were made very welcome by Mike, whose late father Frank was a former editor of the Avicultural Magazine. Our tour focused mainly on the avian exhibits at this modern and successful collection, and we also learned something of the zoo's history and planned future developments. Having started as a bird collection at a family-run farm shop, the zoo, which is still run by the founding Goymour family, has diversified and expanded over many years, and is now part of the Zoological Society of East Anglia, a charity established to ensure the future of the zoo and its conservation work, along with its sister collection Africa Alive!

The first exhibit greeting visitors on entering the zoo is an aviary housing Trumpeter Hornbills *Bycanistes bucinator*. Our next port of call was Eureka!, a large subtropical house featuring a colourful display of heliconid butterflies, but also butterfly-friendly birds including Victoria Crowned *Goura victoria* and Pied Imperial *Ducula bicolor* Pigeons and Green-winged Doves *Chalcophaps indica*. The crowned pigeons had nested successfully, high up on the building's framework, ignoring a purpose-built nesting platform nearby. Buffon's Turaco *Tauraco persa buffoni* and Sun Bittern *Eurypyga helias*, have been introduced as single birds to assess their compatability with butterflies. They have so far proved not to be butterfly hunters, and a mate is being sought for the Sun Bittern. Other planned additions include Hottentot Teal *Anas hottentota*, to take advantage of the large ponds, stream and waterfall. The house also contains separate enclosures for Egyptian Fruit bats, Red-footed Tortoises, Red Titi Monkeys and Azara's Agoutis. Although relatively new, plans for extension are already under consideration.

This house was originally conceived as a walk-through aviary for Swainson's Lorikeets *Trichoglossus haematodus moluccanus*, and a large colony is housed in a conventional aviary elsewhere in the zoo. Chicks are produced here, but better results are obtained from pairs housed in individual flights in the Bird Garden, which also houses breeding Bali Mynahs *Leucospar rothschildi*, Red-crested Turacos *Tauraco erythrolophus* and Von der Decken's Hornbills *Tockus deckeni*. This area and the lorikeet aviary are possibly scheduled for redevelopment in the extension of the subtropical house and sealion pool.

Black-footed Penguins *Spheniscus demersus* have recently settled very well into a newly refurbished and extended walk-through exhibit and are breeding well already, though they are apparently reluctant to make full use of the pool, a pity as it has a large window for underwater viewing. This netted African-themed exhibit also houses African Spoonbills *Platalea alba* and White-faced Whistling Ducks *Dendrocygna viduata*, which will shortly be joined by Cape Teal *Anas capensis* and Little Egrets *Egretta garzetta*. Here we learned that snow is now removed from aviary roofs with petrol-powered leaf blowers – much easier and more effective than the traditional broom, with a longer reach for taller areas – though I did wonder later which method the birds prefer!

The Chilean Flamingo *Phoenicopterus chilensis* colony breeds regularly. Eggs are removed for incubation, replaced with wooden dummies and returned on pipping. Chicks have also been successfully handreared, but this had proved unnecessary this year.

The zoo formerly housed a large waterfowl collection, but this has been cut back following the return of wild otters to the area. There is still a large flock of Red-breasted Geese *Branta ruficollis* which breed regularly. Twenty-two young were handreared in 2014, but no eggs were produced in 2015, a situation mirrored by reports from other waterfowl breeders. However we did see Bar-headed Geese *Anser indicus* with well-grown goslings. The area housing the redbreasts is due for extension and refurbishment and will also become home to the flamingo colony.

A range of three aviaries housed larger South American birds, with a breeding colony of Scarlet Ibis *Eudocimus ruber* flanked by pairs of Northern Helmeted Curassow *Pauxi pauxi* and Red-legged Seriema *Cariama cristata*. The curassows are young birds, while the seriemas are regular breeders but failed this season. The ibis were still nesting at the time of our visit. Parent rearing has been successful but chicks are sometimes lost in poor weather. We saw two well-grown juveniles which had been handreared and recently introduced to the aviary.

A number of owl species is maintained, including Boobook *Ninox novaeseelandiae* and Spectacled *Pulsatrix perspicillata* Owls, and Banham is one of the zoos helping to house the World Owl Trust collection, formerly at Muncaster Castle, until it can be re-established at a new home under development in the midlands.

The species above are just some of the birds in the collection, and I hope other members had more time than I did to look at mammal, reptile and other exhibits, as there is much of interest. There are excellent enclosures for big cats, including Siberian Tiger, Sri Lankan Leopard, Cheetah and Snow Leopard, also Maned Wolves, the largest Prairie Dog colony in Europe, interesting lemurs and a large collection of South American primates.

We were told that the Banham animal shows would be worth seeing, and we were treated to two very well presented educational and entertaining displays. The first was an indoor show called Amazing Animals, which featured rats, a Barn Owl *Tyto alba*, Swainson's Lorikeets taking nectar from the audience, a Red-legged Seriema murdering a rubber snake and a Serval demonstrating its jumping prowess. The outdoor flying display started with Blue and Gold Macaws *Ara ararauna*, continuing with a very low-flying Great Grey Owl *Strix nebulosa* skimming the audience, followed by a Peregrine Falcon *Falco peregrinus*. The finale was a number of Hooded *Necrosyrtes monachus* and Ruppell's Griffon *Gyps ruepelli* Vultures flying together – an impressive sight.

Following the display, a number of us were lucky enough to visit Roger Cattermole, who lives locally and kindly invited us to view his collection. Roger is well-known as a successful waterfowl breeder who also has an interest in softbills. One of his special interests and areas of expertise is breeding pygmy geese, and we saw a number of pairs of African Pygmy Geese *Nettapus auritus* and Cotton Teal *Nettapus coromandelianus*. The birds are housed in outdoor aviaries for breeding, and moved to indoor accommodation for the winter. In both situations the birds have access to larger water than land areas, and the African species in particular has bred well here for many years, though fertility was very poor in 2015. The same could not be said for Rogers's mutation waterfowl – we saw Mandarins *Aix galericulata*, Carolinas *Aix sponsa* and Ringed Teal *Callonetta leucophrys* in more colours than I can remember (or knew existed) as well as Silver Fulvous Whistling Duck *Dendrocygna bicolor* and Baikal Teal *Anas formosa*. Incubation is carried out using both incubators and bantams, and ducklings reared under lamps – very successfully, judging by the number of young birds on view.

The collection also contains a number of other choice and difficult waterfowl species, and we saw some beautifully planted aviaries housing other birds including Purple, Blue-eared and Superb Glossy Starlings *Lamprotornis purpureus*, *L. chalybaeus*, *L. superbus*, together with columbiformes including Bartlett's Bleeding Heart *Gallicolumba criniger*, Black-naped Fruit Dove *Ptilinopus melanospilus* and Jamaican Crested Quail Dove *Geotrygon versicolor* , and Vulturine Guineafowl *Acryllium vulturinum*. A larger aviary nicely constructed from scaffolding poles over established fruit trees contains a group of Scarlet Ibis, and Roger has plans for another similar aviary. This is a collection where success is founded on hard work and dedication – few birdkeepers manage to successfully juggle full-time employment and a collection as demanding as this.

The weather was kind to us, and members and their guests enjoyed looking at two excellent collections, learning from our hosts and of course socialising – these meetings are always a good opportunity to catch up with old friends and make new contacts.

NEWS FROM LORO PARQUE FUNDACIÓN, OCTOBER 2015

By Dr. Juan Cornejo, Curator of Birds

In October we had the first rain in the north of Tenerife which means the dry season is finished. We have already removed the nests of a big proportion of our species to give the females a rest. Meanwhile the yearly check-up progresses well and is keeping the vets busy.

Macaws are the principal exception, because there are still some pairs with chicks in the nest. Among them are our two Lear's Macaw *Anodorhynchus leari* chicks, which were recently ringed. In most of the other species the chicks have already left the nest: this is the case with two juvenile Cape Parrots *Poicephalus r. robustus*, which were ringed in July and are now completing their development with their parents.

Two Cape Parrots (on the nestbox) are cared for by their parents (on the branch)

We use this time of low breeding activity to incorporate birds into the collection. The quarantine area is now full of newcomers: a couple of Red-tailed Black Cockatoos *Calyptorhynchus banksii*, a trio of Red-fronted Macaws *Ara rubrogenys*, two pairs of Grey-hooded Parakeets *Psilopsiagon aymara*, one Halmahera Eclectus Parrot *Eclectus roratus vosmaeri*, in addition to the three parakeet species *Psittacara frontata*, *P. mitratus*, and *P. erythrogenys* and four lories *Trichoglossus iris, T. chlorolepidotus*, *T. goldiei*, and *T. ornatus*. We have a breeding group of all these species, but we consider it important to infuse new blood regularly to avoid inbreeding.

We are celebrating the hatching of Chilean Flamingos *Phoenicopterus chilensis* after some years without any breeding success for this species. Fighting among pairs can cause eggs to fall out of the nest. So, to avoid this, we remove the newly laid eggs, substitute them with decoys, incubate them artificially and put them back into the nests when they have begun to hatch. This system has worked well and our visitors can now enjoy the sight of six chicks which are being cared for and fed by their parents.

Recently a Palm Cockatoo *Probosciger aterrimus* chick, which is being hand-reared, has kept us really busy. His parents had broken eggs previously, so we decided to incubate this last egg artificially. Hatching was complicated because the chick was badly positioned, with a leg over its head, we were able to help it and it hatched without problems. The Palm Cockatoos are probably the most difficult parrots to be hand-reared from the egg, but after a slow start the chick is growing very well.

The first Palm Cockatoo chick of this year

As in previous years, at the beginning of the month we received visiting students from the Veterinary Faculty of the Giessen University, Germany. During two weeks of conferences and practices in the different departments, the 19 students had the opportunity to learn about the animal handling at Loro Parque from our biologists and vets.

JOHN HENRY (JACK) BROWN (1916-2015)

By Dr. Richard Meyer

John Henry (Jack) Brown (1916-2015), owner and founder of the Padstow Tropical Bird Gardens in Cornwall, died on Friday, 6th November peacefully at home. He was 99 and thus deprived the pleasure of receiving his telegram from the Queen, which would have thrilled him.

Jack and his wife Peggy founded the bird gardens in 1970 when Padstow was still a fishing village, long before it became a fashionable watering hole. Even so, the gardens were very successful but they lost focus when he finally retired and withdrew from day to day management, finally closing to the public in the mid 1990s. I was the first keeper/curator and have very fond memories of the early days. Although we specialised in tropical soft-billed birds, we were the first to begin gathering Choughs together from other collections with a view to their breeding and eventual re-establishment in the Duchy. Something which is now happily coming to fruition.

Jack remained in Padstow overlooking the old bird gardens until the end. He is survived by his son David, his daughter Margaret (Mij) my wife and many grandchildren - of whom he was passionately fond, especially Sally who cared for him beautifully through his final years.

RUFOUS-BACKED BUNTING *Emberiza jankowskii*

The Rufous-backed Bunting *Emberiza jankowskii* is Asia's rarest bunting and now has a restricted breeding range in a small area of north-east China. In April 2013 six sites were found and thought to hold breeding populations of this species. At a site near Horqin National Nature Reserve, 41 males were located, most were singing and this is almost double that of 2011 after an area was fenced to keep out grazing domestic stock. Further studies and conservation measures are planned and it is hoped that these will help prevent the extinction of this exciting species.

* * *

REGENT HONEYEATER *Xanthomyza phyrgia*

For the best part of two decades the Regent Honeyeater Recovery Project has implemented a vast range of conservation measures to halt its decline. These measures include habitat restoration, comprehensive surveying and captive breeding and release. Listed as critically endangered because its population is inferred to have undergone extremely rapid declines over the past three generations (24 years). These declines have been driven primarily by drought, compounded by habitat loss caused by historic clearance for agriculture, and possibly competition with other native species, particularly the Noisy Miner *Manorina melanocephala* and Noisy Friarbird *Philemon corniculatus.* Three releases of captive bred birds have been undertaken. The latest consisted of 38 individuals released in the Chiltern-Mt Pilot National Park in north-eastern Victoria. Two previously in 2008 (27 birds) and 2010 (44 birds), as well as the current one have all exceeded the short-term pass mark of 70 per cent survival after the first two weeks. All had been colour ringed and extensively surveyed to be able to come to this conclusion.

* * *

NORTHERN MOCKINGBIRD *Minus polyglottos*

Light pollution has long been the bane of many a stargazer but it does have some benefits. Five populations of Northern Mockingbird *Minus polyglottos* were studied and found to feed nestlings fifteen minutes later than those at other sites. This abundant species is known to exploit its urban environment and has added another element to extend feeding duration and improve breeding success.

* * *

RARE NEW ZEALAND DUCKS HAVE A NEW HOME

Three breeding pairs of Pateke or Brown Teal *Anas chlorotis*, were released on Rotoroa Island in September after being bred in Christchurch's Peacock Springs.

They are being settled into three wetlands on the Hauraki Gulf Island where Auckland Zoo and the Rotoroa Island Trust are creating a wildlife reserve.

The new arrivals were fitted with transmitters to enable regular monitoring and will be supplementary fed via feeding hoppers as part of the bird's intensive conservation management.

It is estimated there are only 2000 to 2500 Pateke living in the wild, making it New Zealand's rarest waterfowl species on the mainland.

It is hoped the Rotoroa Pateke will go on to breed and their offspring will either be moved to new sites or allowed to disperse naturally.

There are wild Pateke on the Coromandel and Great Barrier Island, both a short flight away. The Pateke is the seventh native species to be introduced to Rotoroa under the partnership between Auckland Zoo and the Rotoroa Island Trust.

* * *

AUSTRALIAN NIGHT PARROT *Pezoporus occidentalis* FOUND AGAIN AFTER 100 YEARS

The elusive Night Parrot *Pezoporus occidentalis*, a species thought to be extinct for about 100 years, has finally been captured and tagged by scientists as part of a pioneering project to safeguard the remaining ground-dwelling birds. Besides two dead parrots found over the past 25 years, the Night Parrot had not been captured since the 1890s and was presumed extinct by many bird experts. But in 2013, ornithologist John Young announced that he had taken a few blurry images of the Night Parrot after a decade spent scouring the spinifex vegetation and caves of the Queensland outback for the bird.

At exactly 7pm on Easter Saturday 2015 a history-making sound was heard from close to a clump of spinifex in south-eastern Queensland. The sound was that of a human voice proclaiming "we've got one". The one in question was a Night Parrot that had been caught in a mist net. The bird was quickly extracted and a transmitter fitted before releasing it again.

Members of the Night Parrot team then had three weeks of battery life to track the bird and find out as much as possible about the bird's movement. They found that it was quite mobile travelling up to 7 km each night, even venturing out of its normal spinifex habitat. The team is now beginning to get more of an insight into the parrot's life. Besides radio-tracking the team have taken over 14,000 camera trap pictures, unfortunately not showing any parrots but several of feral cats, a major wildlife predator in some areas of Australia. High specification sound equipment was also used to collect data at night. Using complex computer programmes they have managed to sift through many thousands of different sounds to locate 4500 calls by the Night Parrot. Several of these recorders are now being deployed in different localities to see where else they may exist.

* * *

NEW BIRD FAMILY DISCOVERED IN ASIA

Based on analysis of several genes, a team of researchers from five countries identified ten primary branches in the tree of life of one of the largest groups of passerine birds, the so-called Passerida, which comprises around 36% of the World's 10,500 bird species.

Remarkably, one of these primary branches was made up of a single species, the Spotted Wren-Babbler *Spelaeornis formosus*, which is a small wren-like bird that occurs in mountains from the eastern Himalayas to southeast China.

The researchers propose the new family name Elachuridae for this single species. They also suggest that the scientific name *Elachura formosa* should be used, and the English name be changed to Elachura, to highlight its distinctness. It has been described as extremely secretive and difficult to observe, as it usually hides in very dense tangled undergrowth in the subtropical mountain forests. During the breeding season the males sing their characteristic, high-pitched song, which doesn't resemble any other continental Asian bird song. It can sometimes be seen sitting on a branch inside a bush.

This species apparently represents an old branch in the large passerine tree, without any close living relatives. The fact that it resembles wren-babblers and wrens in appearance is either due to pure chance or to convergent evolution, which may result in similar appearances in unrelated species that live in similar environments.

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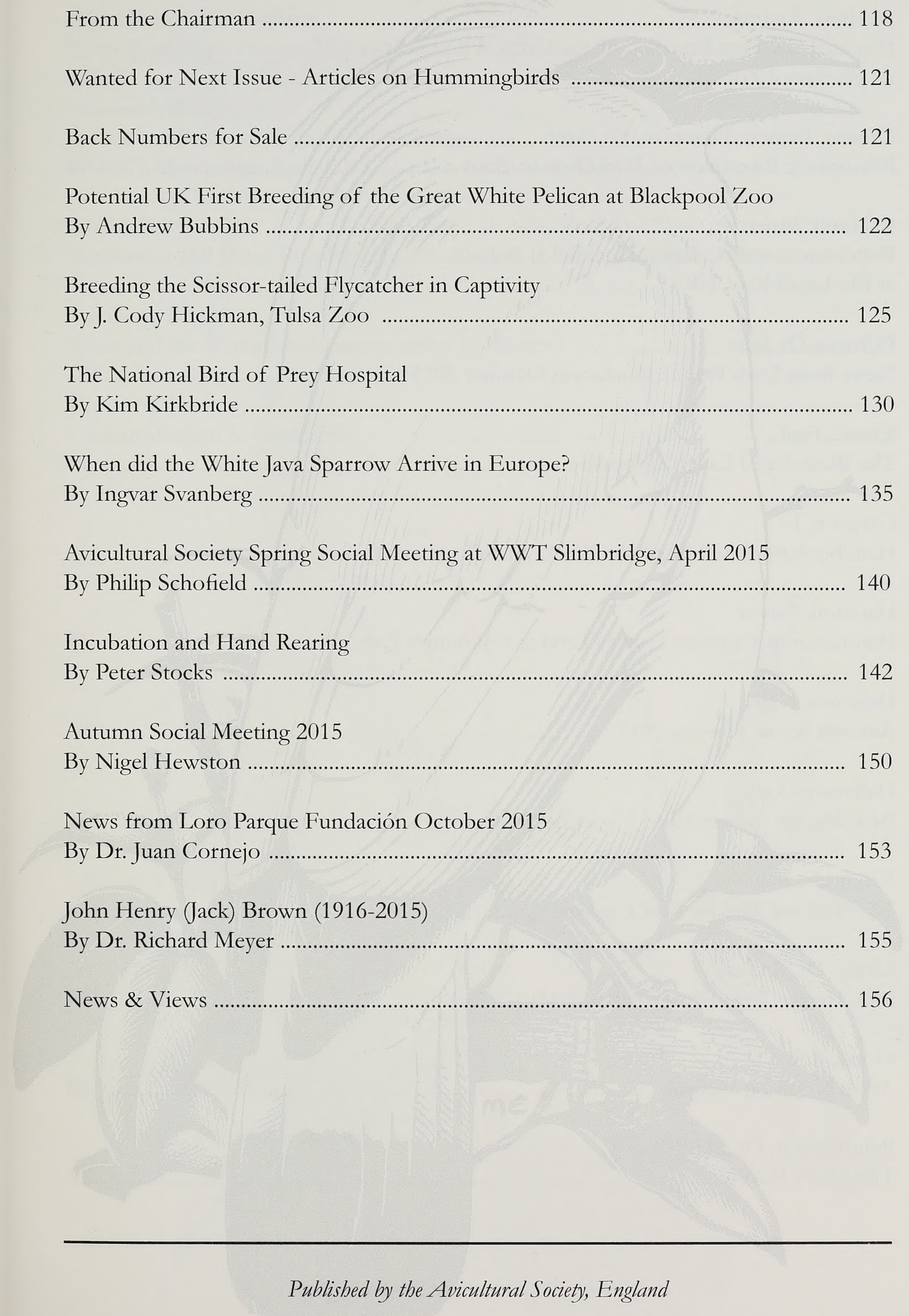

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